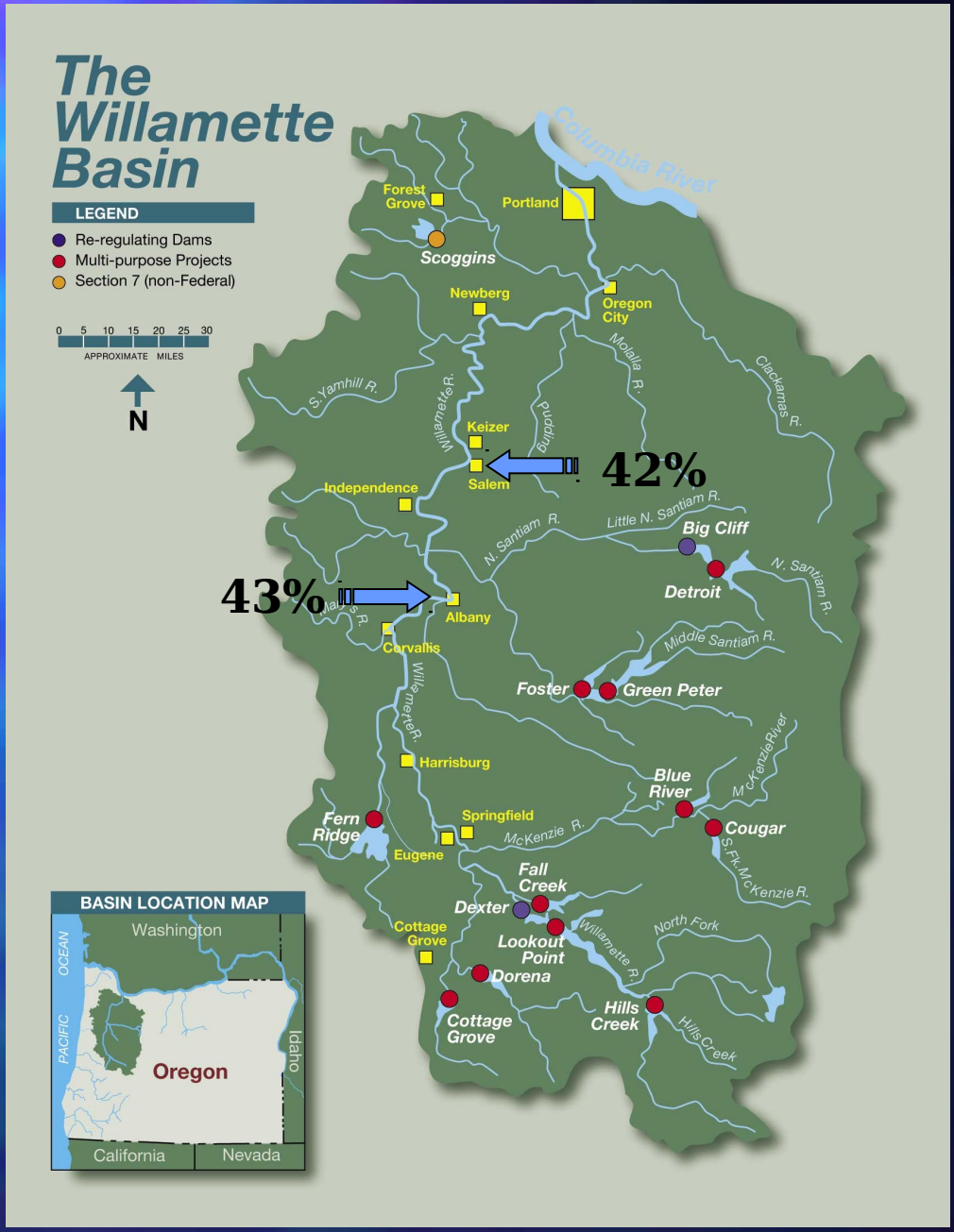
Testing the Ability of the Willamette Basin Reservoir System to Meet Proposed Fish Flows

US Army Corps of Engineers

John Hickey and Marilyn Hurst
Water Resource Systems Division, IWR-HEC
Bruce Duffe and Alan Donner, Hydrology,

Willamette Basin Project



ESA Listed Specie

Photo courtesy of Scott Craig, USFWS, Lacy, WA

- Oregon Chub
  - Endangered; 1993
- Columbia River Bull Trout
  - Threatened; 1998
- Upper Willamette Spring Chinook Salmon
  - Threatened; 1999
- Upper Willamette (Winter) Steelhead
  - Threatened; 1999

History

- 1993-1999 – ESA Listings
- 1999 – Interim flow objectives
- 2000 – Draft Willamette BiOp (w/RPA's)
- 2001 – Flow objectives were deemed unattainable in "drought" conditions
- 2002 – USACE modeling of proposal
- 2002 – USACE Discussion Paper (Results)
- 2003 – BiOp still being "worked"

BiOp and Existing Flow Objectives

Time Period	Congressionally Authorized (cfs)	BiOp Minimum Flow Target (cfs)	Biological Threshold Flow Target (cfs)	Unregulated Monthly Average (cfs)
April 1-15	NA	20,500	15,000	30,100
April 16-30	NA	17,800	15,000	
May 1-31	NA	15,000	15,000	23,000
June 1-15	6,000	13,000	11,000	14,700
June 16-30	6,000	8,700	5,500	
July 1-30	6,000	6,000	5,000	6,800
August 1-15	6,000	6,000	5,000	4,400
August 16-30	6,500	6,500	5,000	
Sept - Oct	7,000	7,000	5,000	6,100

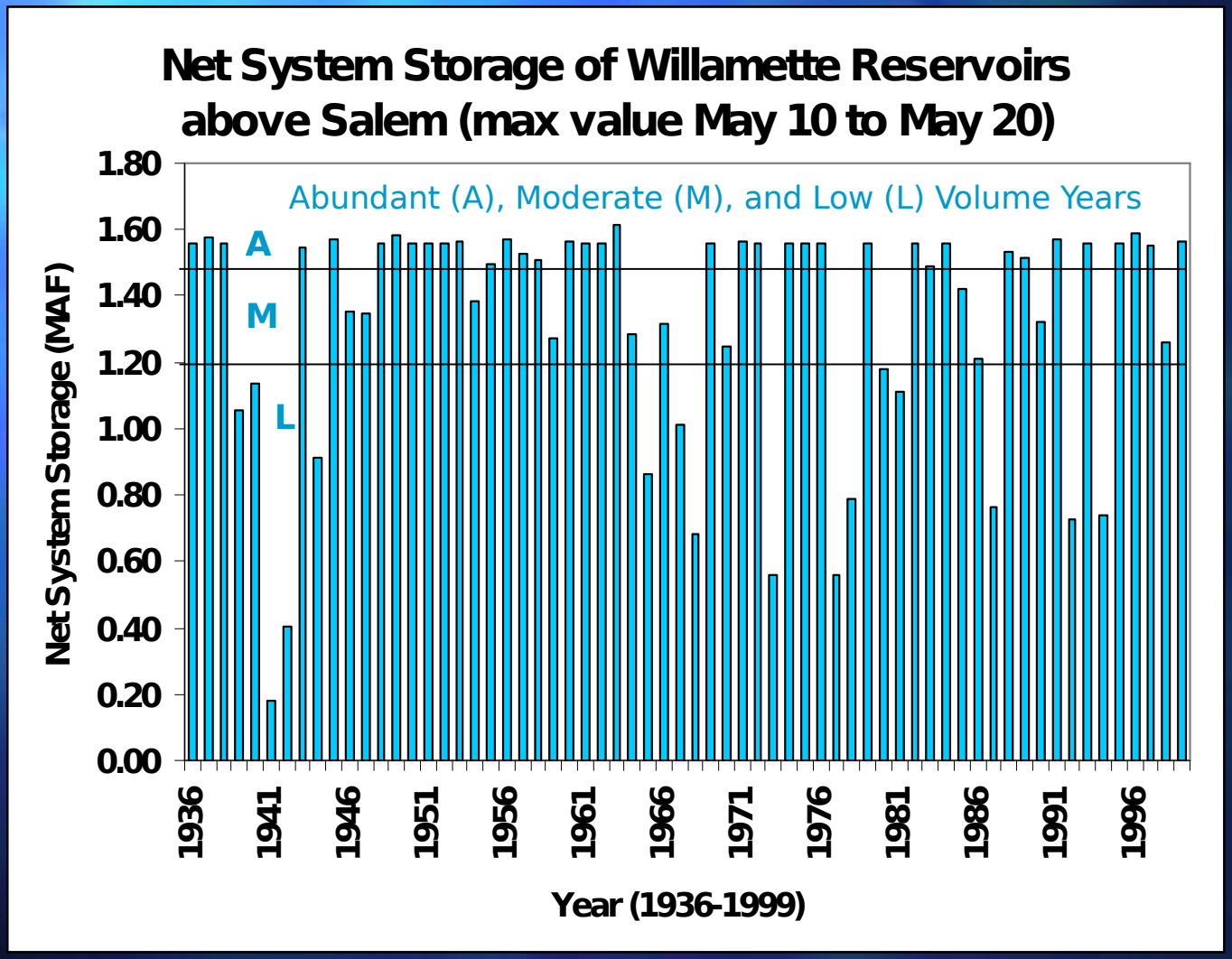
Question…

- *Based on historical hydrology, could the Willamette Basin Reservoir System have released enough water to meet the new fisheries requirements (which called for flows and volumes as much as triple the original requirements)?*

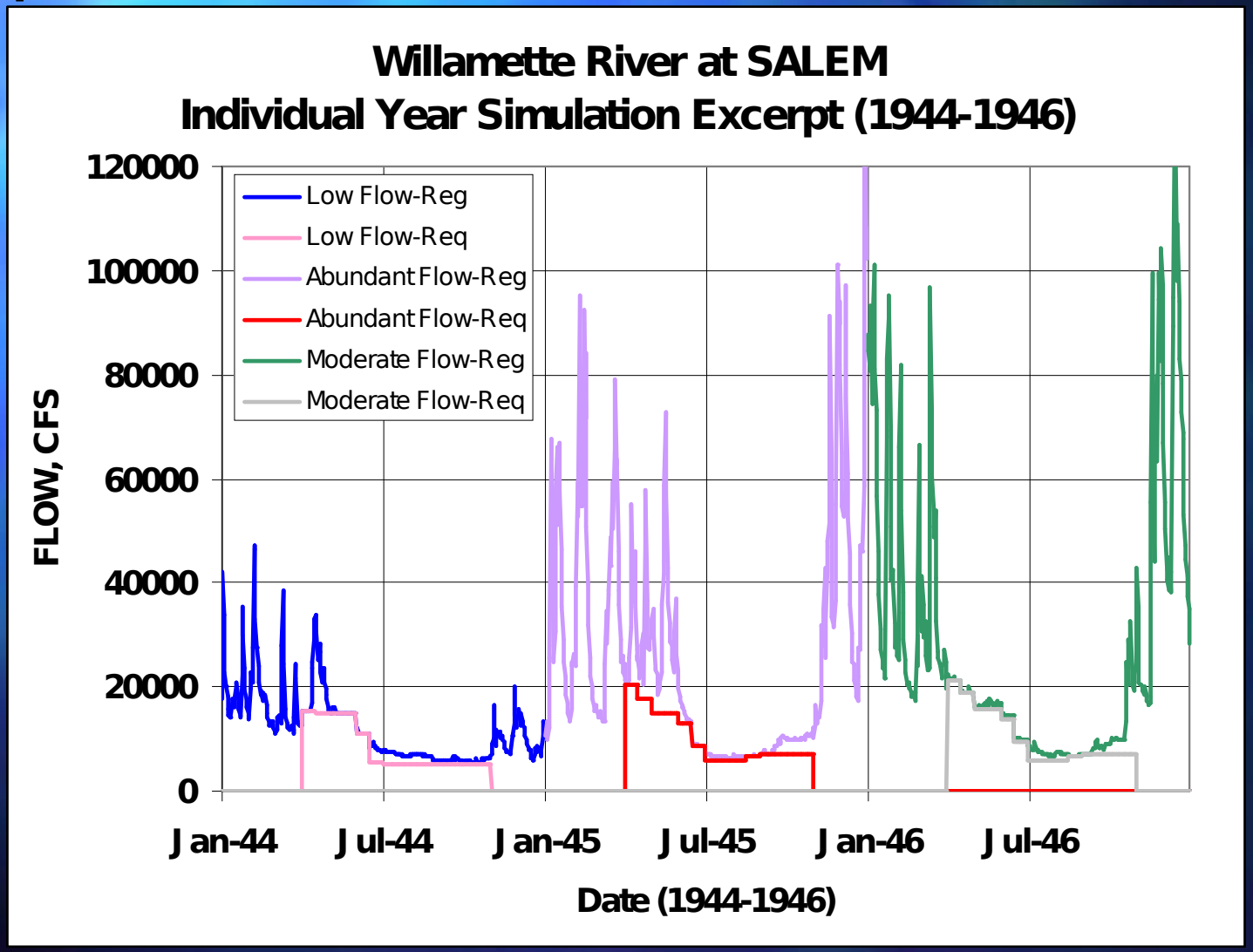
Main Study Tasks

- Identify types of runoff years (abundant, moderate, low)
- Evaluate adequacy of Willamette Project to meet new flow requirements
- Conclusions and Recommendations to include in the BiOp

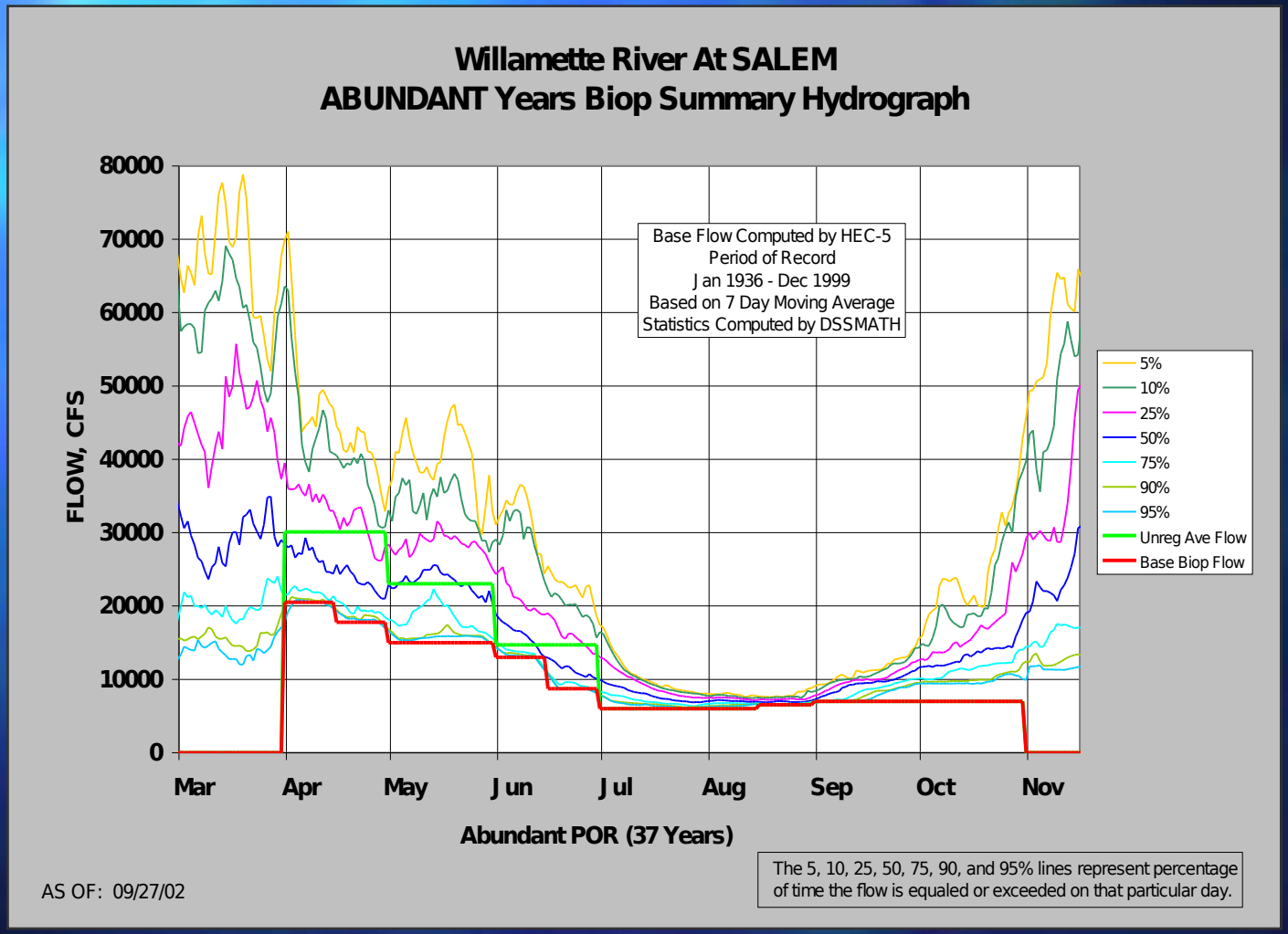
1. Classify Year: System Storage



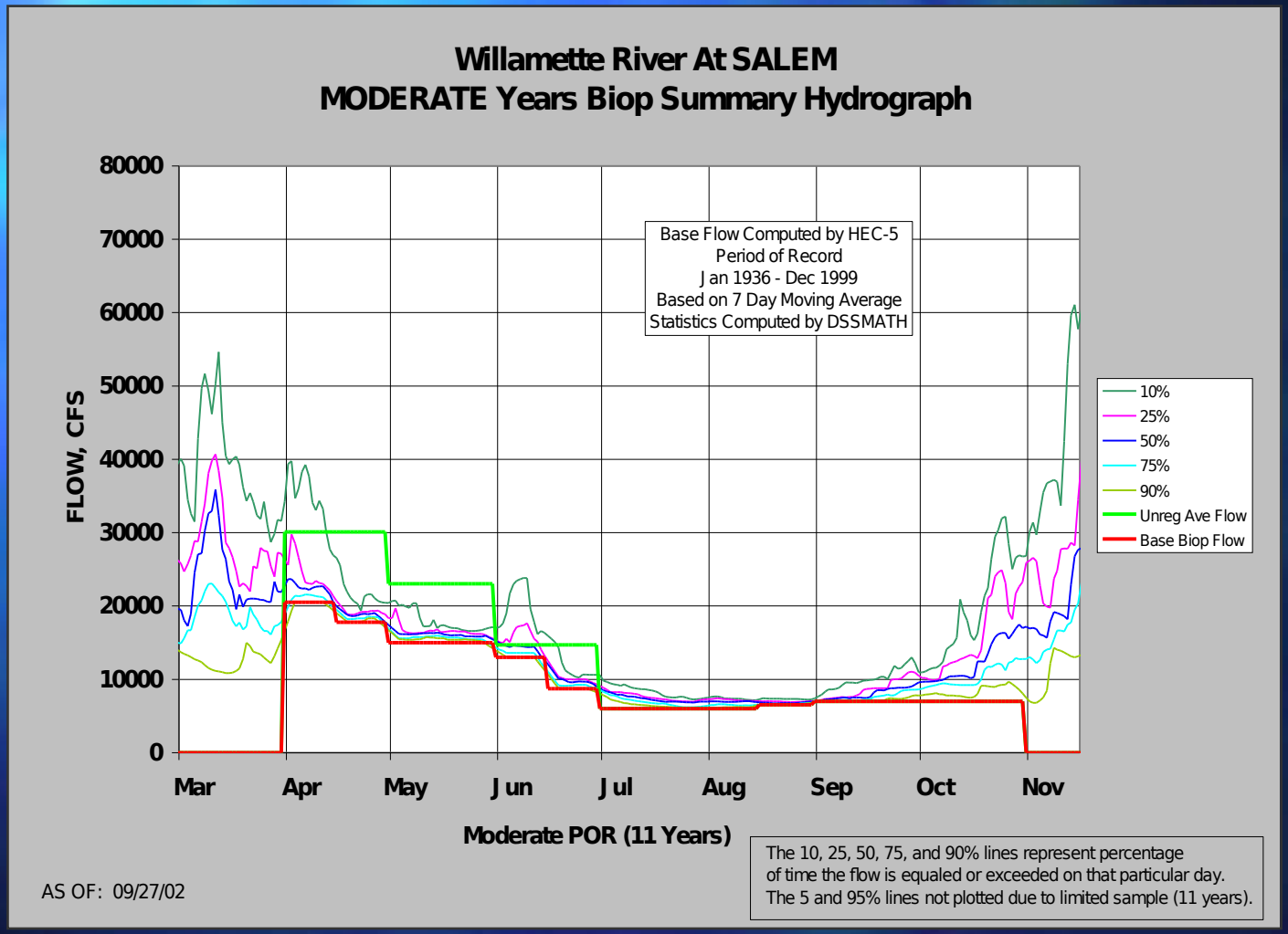
2. Meet New Flow Requirements?



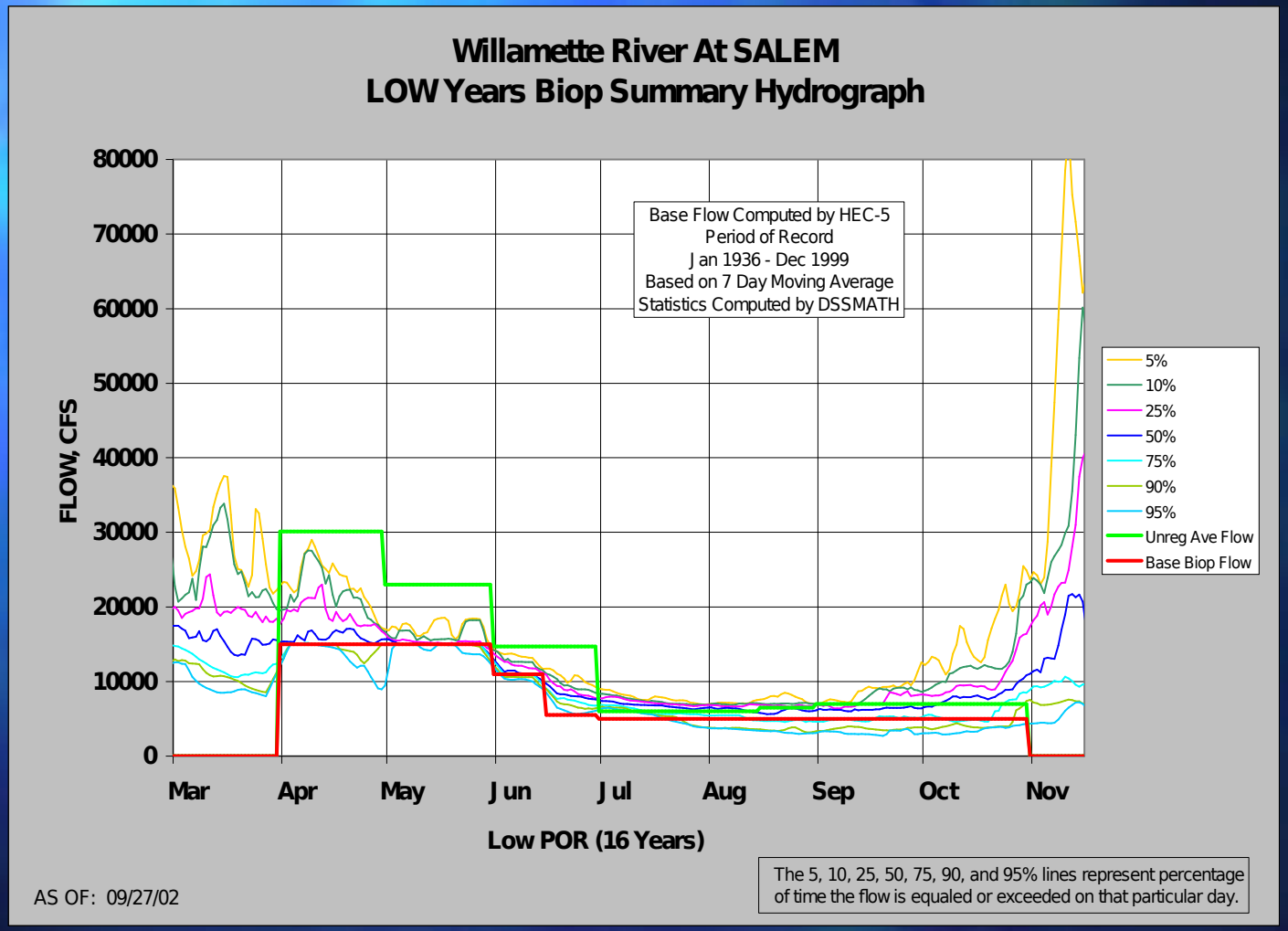
3. Results: Salem – Abundant Years



3. Results: Salem - Moderate Years

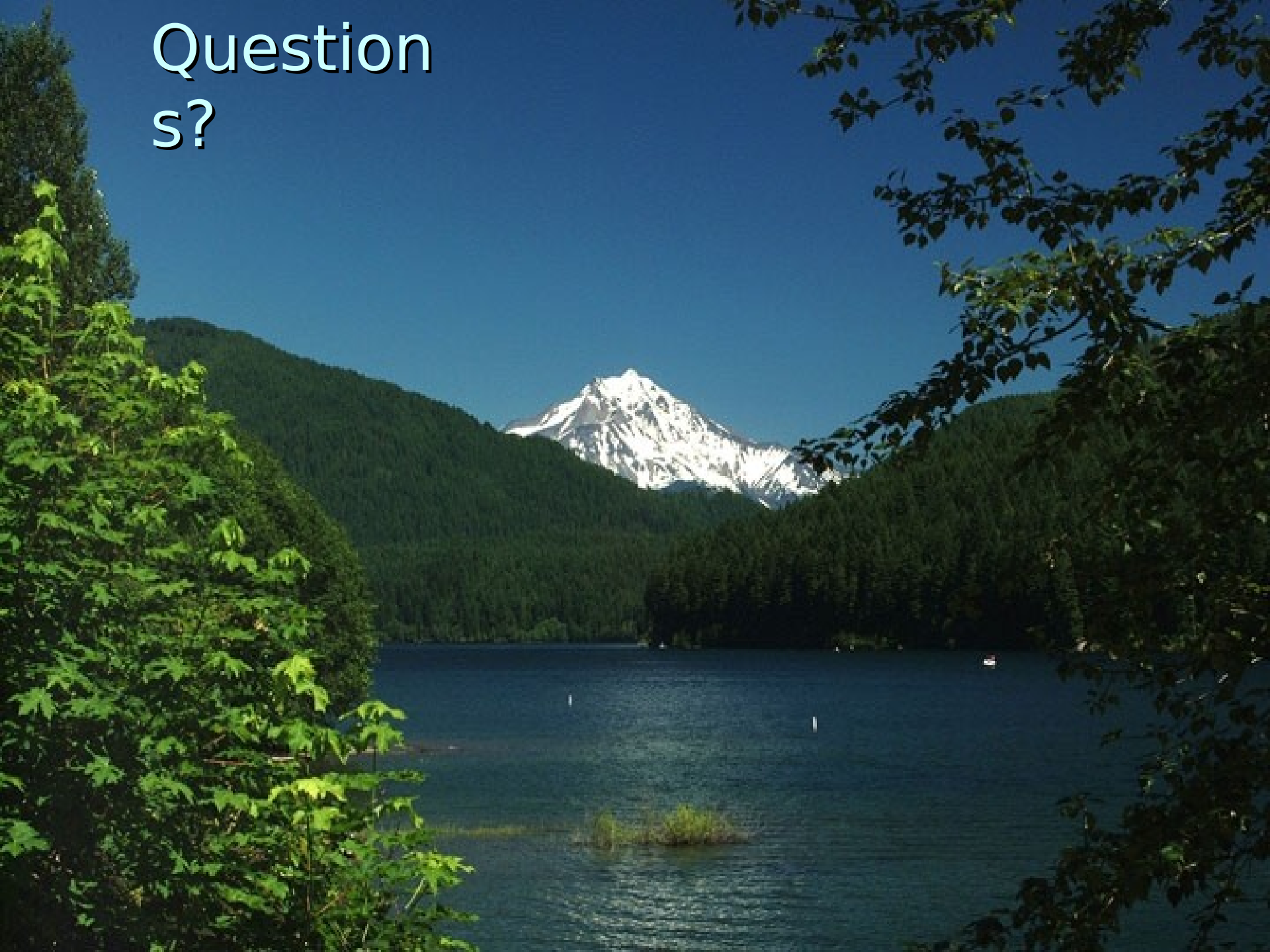


3. Results: Salem – Low Years



Conclusions…

- For the *most* part, the Willamette was able to meet the flow goals
- Transition to ResSim – More visual, flexible
- Good test for ResSim
- Ok for mainstem…what about tributaries?
- Ecosystem tradeoffs…in Lake v. Downstream
- Willamette River experience different than Savannah, Green, …


Questions?